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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/623,541

07/22/2003

Tsuyoshi Shibata

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FITZPATRICK CELLA HARPER & SCINTO  
30 ROCKEFELLER PLAZA  
NEW YORK, NY 10112

EXAMINER

HUFFMAN, JULIAN D

ART UNIT

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/623,541	<b>Applicant(s)</b> SHIBATA ET AL.	
	<b>Examiner</b> Julian D. Huffman	<b>Art Unit</b> 2853	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 13 November 2008.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 4-7 and 15-18 is/are pending in the application.  
     4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 7 and 18 is/are allowed.
- 6) ☒ Claim(s) 4-6 and 15-17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
     a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 4-6 and 15-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oyen (U.S. 6,481,816) in view of Bland (U.S. 6,278,469).

Oyen discloses:

With regards to claims 4 and 15, an inkjet printing method and apparatus using a printing head (fig. 1, element 3) having a plurality of nozzles (7) capable of ejecting ink for printing an image by ejecting ink based on printing data which instructs ejection or non-ejection of ink, the plurality of nozzles being aligned next to each other along a predetermined direction, the image being completely printed in a predetermined area of a print medium by a single movement of the printing head relative to the printing medium while ink is ejected from the nozzles of the printing head based on the printing data (column 4, lines 45-49, column 5, lines 23-29), comprising,

compensation means (fig. 2, element 14) for/step of adding the printing data corresponding to an abnormal nozzle malfunctioning in ink-ejection to the printing data corresponding to a neighboring nozzle of the abnormal nozzle (abstract),

when an N-th nozzle of the plurality of nozzles is an abnormal nozzle, a neighboring printing area neighboring a printing area to be printed by the N-th abnormal nozzle is printed by using an (N-M)-th neighboring nozzle and an (N+M)-th neighboring nozzle (where N and M are positive integers) arranged in the neighborhood of the nozzle based on the printing data corresponding to the N-th abnormal nozzle,

the printing data corresponding to the N-th abnormal nozzle is added to the printing data corresponding to the (N-M)-th neighboring nozzle and the (N+M)-th neighboring nozzle (figs. 5a-5d, column 6, lines 2-25).

Oyen discloses that the amount of ink deposited by the neighboring nozzles may be adjusted (column 6, lines 18-25).

Oyen does not expressly disclose compensation means for causing the printer to perform the step of adjusting the ratio of the printing data corresponding to the N-th abnormal nozzle to be added to the printing data corresponding to the (N-M)-th neighboring nozzle and the (N+M)-th neighboring nozzle based on landing states of the (N-M)-th neighboring nozzle and the (N+M)-th neighboring nozzle, the states obtained based on information regarding the landing position and diameter of the neighboring nozzle as obtained from a test print, such that when one of the neighboring nozzles has a better landing state than the other, the ratio of the printing data to be added to the better neighboring nozzle is higher than that of the other neighboring nozzle.

Bland et al. discloses performing a test print on print medium, determining the landing states, including landing position and diameter information, of the nozzles, and

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adjusting the ratio of ink deposited based on the states such that less ink is deposited by nozzles with poor landing states than nozzles with normal landing states (abstract, more ink from higher quality nozzles and less ink from lower quality nozzles). Further, Bland et al. teach that the technique may be applied to any ink jet printer (column 11, line 67).

It would have been obvious to one having ordinary skill in the art at the time of the invention to provide compensation means in Oyen which causes the printer to perform the step of adjusting the ratio of printing data based on landing states of the nozzles as claimed, as suggested by Bland, for the purpose of improving print quality without reducing throughput.

### ***Response to Arguments***

Applicant's arguments concerning claims 7 and 18 have been considered and are persuasive. These claims are allowable.

Applicant's arguments concerning the remaining claims have been considered however they are respectfully not deemed persuasive.

Oyen at fig. 4b discloses a malfunctioning element i which prints at row 2. Oyen teaches at column 6, lines 19-21, that part of the information to be printed by element i at pixel row 2 can be transferred to pixel row 1 and printed by element h and the remaining part to pixel row 3 and printed by element j. A malfunctioning nozzle can have, for instance, 30% of its density printed by a neighboring or adjacent nozzle and the remaining 70% of its density printed by another neighboring or adjacent nozzle.

Then when the teachings of Bland are considered, which discuss adjusting the ratio of printing data distributed to nozzles based on their functionality or print quality, it is seen that incorporating this teaching into Oyen results in selectively choosing how the printing data is distributed between the neighboring nozzles based on their print quality such that less data or density is distributed to the lower quality nozzles than is distributed to the higher quality nozzles, or vice versa.

***Allowable Subject Matter***

Claims 7 and 18 are allowed.

***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Julian D. Huffman whose telephone number is (571) 272-2147. The examiner can normally be reached on 10:00a.m.-6:30p.m. Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Meier can be reached on (571) 272-2149. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Julian D. Huffman/  
Primary Examiner, Art Unit 2853